SIMBAD
Sensors Integration & Modeling for Biological Agent Detection

BAA 00-17
Program Manager
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Outline

- Program Objectives
- Technical Scope
- Estimated Funding
- Program Schedule & Phases
- Security
- Requirements, Reports and Deliverables
- Evaluation Criteria
- SIMBAD Website
- Frequently Asked Questions

SIMBAD Program Objectives

Goal: **Deliver fully integrated well-characterized sensor systems capable of responding to specific threats***

***Threats will be defined as part of the SIMBAD program.**

Result: **Sensor System Prototypes**

Supporting Goals

- Develop engineering models that permit component and system level optimization and performance prediction
- Develop protocols for validation of the above models (Live agent testing)
- Develop detailed engineering description of threat
- Evaluate component and system response under realistic scenarios

Results of effort

- Model sensors in variety of backgrounds
- Evaluate sensitivity with estimates of false alarms
- Model-based understanding for optimization of sensitivity and false alarm rates
- Estimates of performance in units relevant to human exposure risk
- Extrapolation of models and results to new environments
- Prediction of multi-sensor network performance
- Flexibility to respond to new threats

Core SIMBAD Effort

Work Area 2

Phase I

Develop Program Plan

DM&V single (class) sensor against given threat

Down Selection

Phase II

Update Program Plan

Execute SIMBAD Program Plan

- Task Element 1
  - Detailed Plan for Phase I submitted as Proposal
  - Develop & Deliver Detailed Program Plan for Phase II
- Task Element 2
  - Execute Phase I Program Plan
    - Exemplifies capabilities
    - Foundation for Phase II

- Task Element 1
  - Bi-annual Updates
    - Respond to New Threats
    - Add/Delete Team Members
- Task Element 2
  - Execute Program Plan
  - Deliver Sensor Systems

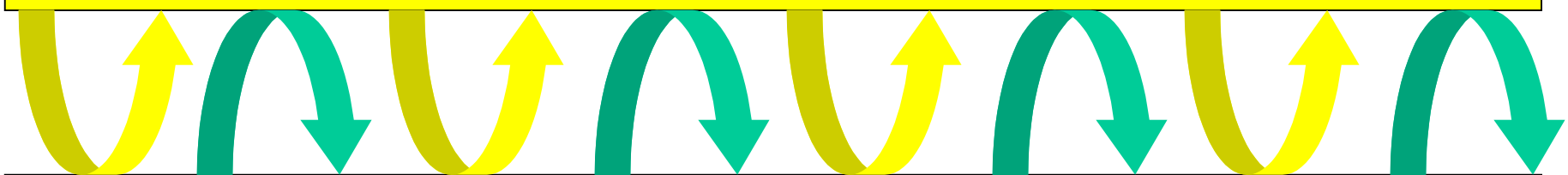
Core SIMBAD Effort, Task Elements

Work Area 2

Special Projects Office

- **SIMBAD Program Plan**
  - Roadmap for development, integration & delivery of well-characterized sensor system
  - Specific list of BW (and CW) sensors
  - Describe Methodology for characterizing & modeling sensors
  - Protocol for validating models
    - Live Agent Testing
  - Periodic Updates of SIMBAD Program Plan
    - Respond to new threat scenarios
    - Opportunity to add/delete team members with DARPA approval

Task Element 1



- **Execute SIMBAD Program Plan**
  - Develop, Model & Validate (**DM&V**) BW (&CW) Sensor Systems
  - Identify/Optimize elements that drive performance
  - Address impact of backgrounds and interferents
  - Evaluate and predict performance against threat scenarios and Validate

Task Element 2

Deliver Well-Characterized Sensor System Prototypes

Work Area 1

Special Projects Office

Modeling and Characterization of Threat Scenarios

Threat scenario elements to be characterized:

- BW (or CW) threat agent used
- Method of agent delivery
- Physical configuration of “target” environment
- Fate and transport of agent
- Environmental background (interferents and other clutter)

Point BW attack against military target

Urban/ high density target

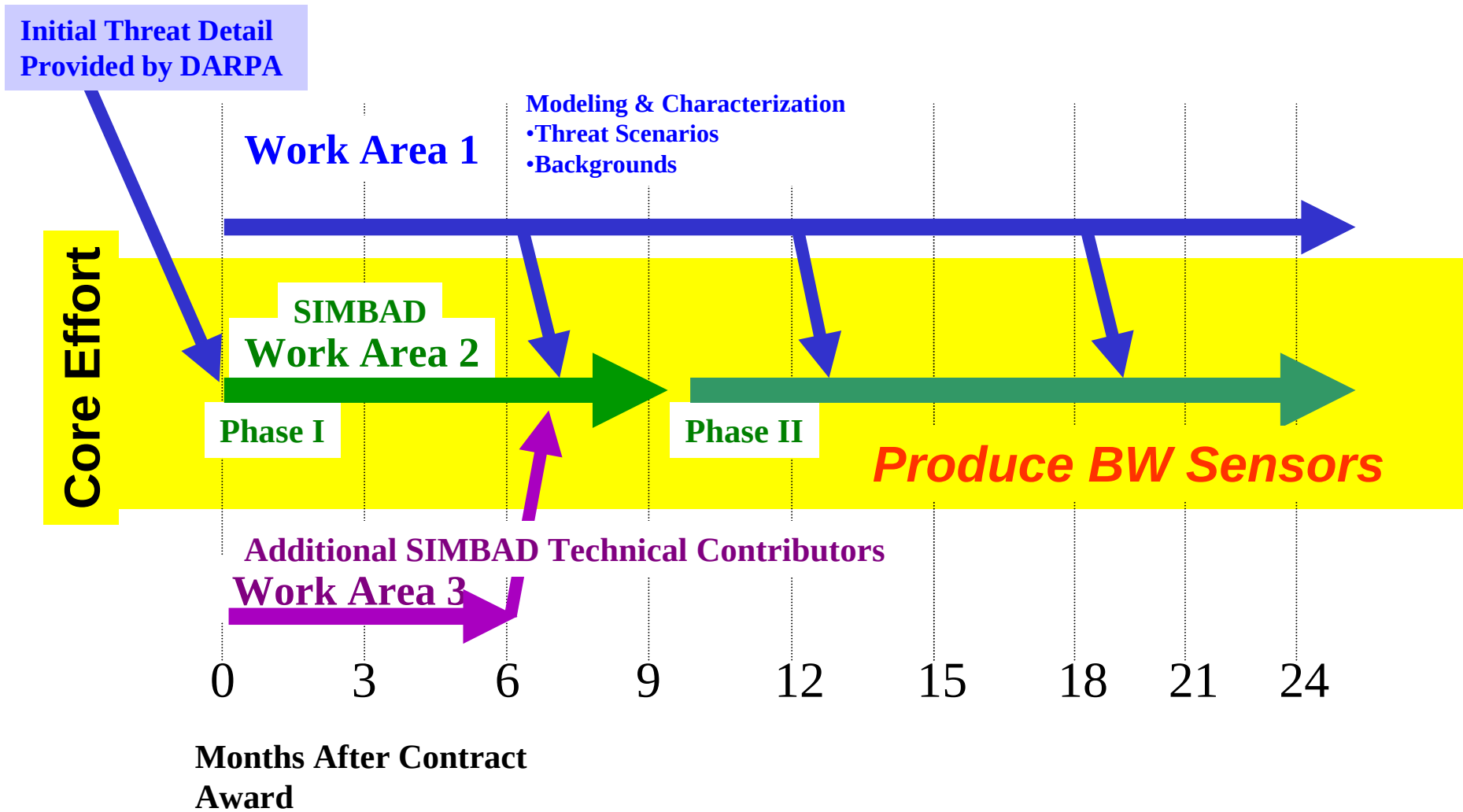
Additional Threats as Directed by DARPA

Threat Scenarios for Phase I Teams will be Provided by DARPA, not by Work Area 1

Work Area 3

- Opportunity for Organizations/Performers to demonstrate value as potential team members under Core SIMBAD Effort (Work Area 2)
  - Limited-duration (6 Months), highly-focused effort
  - Deliverables to DARPA *and at least* one Work Area 2 team
    - Final Brief
    - Final Report
  - Only open to organizations not bidding under Work Area 1 or 2.

Summary - Technical Scope



Estimated Funding

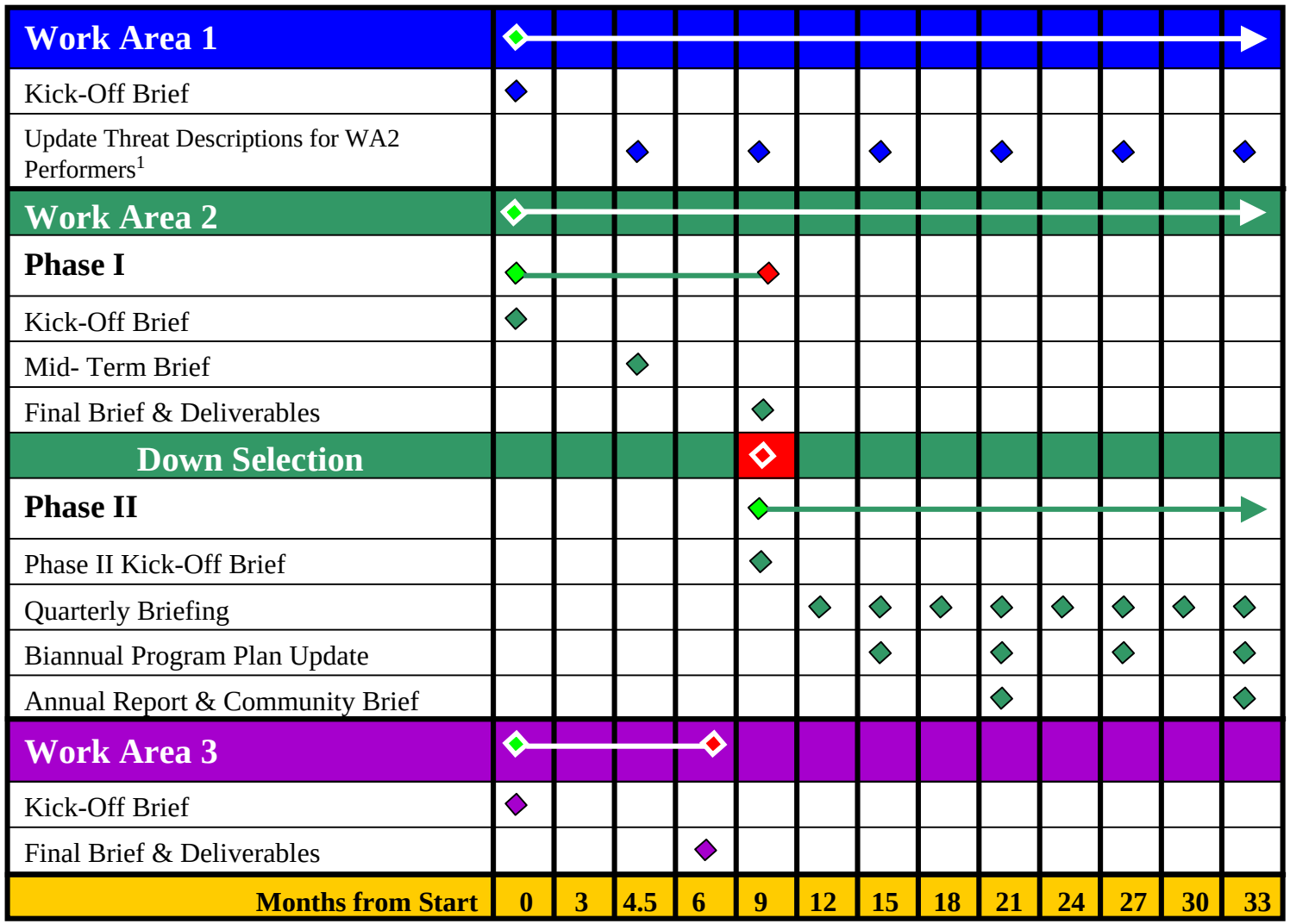
- Core SIMBAD Effort (Work Area 2)
  - Phase II funding estimated at ~$3M per year per team
    - Opportunity to grow funding level as warranted by Program Plan
  - Phase I Funding - $1.1M per team

Phase I FY00	*Phase I FY01*	*Phase II FY01*	*Phase II FY02*
$400K	**$700K**	**$1,500K**	**$3,000K**

- Threat Scenarios (Work Area 1)
  - Funding estimated at $300K per year per effort
- Work Area 3
  - Funding estimated at $50K per effort
    - One time opportunity to further enable team formation into Phase II

Program Schedule

Special Projects Office



[1]First Threat Description Provided by DARPA

Security

- **Security Philosophy**
  - **Sensor system performance against threats will be held at SECRET level**
  - **Sensor system vulnerabilities will be held at SECRET level**
  - **Specific design or technical data which reveal either 1. or 2. will be held at SECRET level**

- **Program Security**
  - **Portions of program will be classified SECRET**
  - **At least 2 key personnel on each team must have SECRET clearance**
  - **Team must possess at least one facility cleared at SECRET or above**
  - **Security Guide will be Provided at Kickoff**
  - **Team members tasks and roles must be compatible with security**
    - **Team integrators have a key role relative to security**

Requirements, Reports & Deliverables

Program Deliverable:

- Integrated well-characterized sensor systems
  - SIMBAD Program Plan (*Work Area 2, Task 1*) Defines Milestones and Schedule for Delivery

Reports & Briefs

- Monthly progress reports

Work Area 1

- Threat Scenarios Updated Biannually

Work Area 2

- Phase I
  - Kick-off, mid-term, final briefs
  - Mid-term & final report
- Phase II
  - Quarterly briefs
  - Bi-annual Program Plan Update
  - Annual report
  - Milestone driven reporting

Work Area 3

- Kick-off & final brief
- Final report
- Brief to at least 1 Work Area 2 Team

Integrated well-characterized sensor system prototypes

Evaluation Criteria

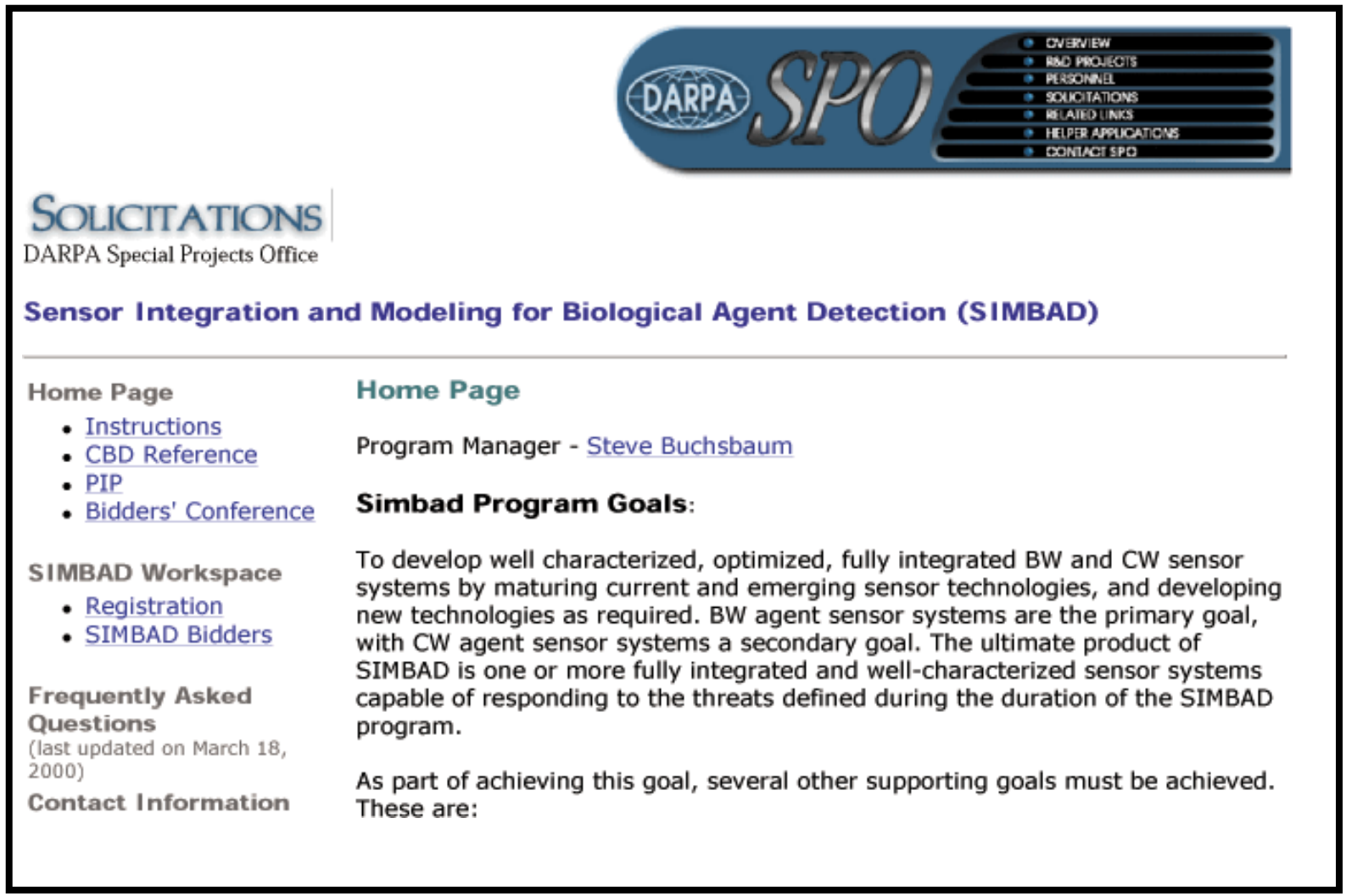
Special Projects Office

1. **Meeting or exceeding the program goals**
   - Likelihood that the effort will result in a well-characterized sensor system for BW agent detection and identification (CW agent detection is a secondary goal)
2. **Overall scientific merit and technical approach**
   - Soundness of proposed work
   - Probability of success
3. **Scope of technology encompassed**
   - Number, type and relevance of sensor technologies examined
   - Range of specific technologies addressed
4. **Offeror' capabilities, past performance and related experience**
   - Breadth and relevance of test facilities available to the team
   - Range, depth and mix of expertise for key personnel
   - Soundness of management plan
5. **Proposed cost realism**

	Work Area 1	Work Area 2	Work Area 3
Criteria 1	X	X	X
Criteria 2	X	X	X
Criteria 3		X	
Criteria 4	X	X	X
Criteria 5	X	x	X

SIMBAD Website

http://www.darpa.mil/spo/solicitations/BAA00-17/index.htm



Questions Regarding SIMBAD

- Frequently Asked Questions (FAQs)
  - Submit via email to baa00-17@darpa.mil
  - SIMBAD Website will have updated FAQs
- Initial Questions Provide as Part of this Brief

- Current Schedule Allocates 45 minutes for Questions
  - All Answers will be Posted to Website
  - Additional Questions Will be Answered on Website
- “Private” Questions will not be answered

FAQs

- **Are CW Sensors of Interest for SIMBAD?**

  The primary SIMBAD focus is BW, with CW as a secondary goal. A BW only effort with a plausible path for future inclusion of CW is acceptable. A CW only proposal is unlikely to be competitive.

FAQs

- **Is this program open to foreign participation?**

  There are classified components of this program relating to both threat and sensor system performance. Foreign participation is not excluded, but it is incumbent upon the bidding team to make clear that foreign participation is compatible with program security. This is equally true for domestic participation for team members and organizations lacking security clearances.

FAQs (cont.)

- **Will DARPA make anthrax antibodies and affinity data on them available GFE to SIMBAD contractors who request them?**

  Contractors must clearly identify all GFE requested as part of this effort in their proposals as well as all resources available to the team. DARPA will evaluate requested government resources incorporated into proposals on a case-by-case basis.

FAQs (cont.)

- **Is this program for characterizing existing sensor systems or developing new systems?**

  The program goal is to produce well-characterized sensor system prototypes for BW defense. We do not believe there currently exist sensor systems which solve this challenging problem. It is incumbent upon the bidding teams to propose a combination of existing technology elements and the new technology development needed to meet this challenge?

FAQs (cont.)

- **Are there specific requirements for sensor system performance?**

  We have not as yet developed specific sensor system performance requirements. These requirements should be part of the program plan, initially proposed by the teams and refined in collaboration with DARPA during the SIMBAD program.

FAQs (cont.)

- **Is there a bias towards or against stand-off sensor systems?**

  An underlying objective of the SIMBAD program is to evaluate the widest possible range of current and emerging BW and CW technologies for possible incorporation into the sensor system prototypes produced. The specific technologies to be integrated into prototypes are determined by the performers, based on their expertise, experience, and innovation. (PIP Section 4.3.1)

FAQs (cont.)

- **Are there follow-on opportunities under Work Area 3?**

  The purpose of this work area is to permit organizations not successful in teaming prior to Phase I to execute the work necessary to demonstrate their value as a potential team member under Work Area 2.

FAQs (cont.)

- **Are organizations restricted to either submitting only a single proposal or participating in a single team?**

  No.

Schedule for Today

Special Projects Office

8:30AM – 10:00AM Briefing on SIMBAD
10:00AM – 10:45AM Q&A

Agenda Room #1

11:15	Rockwell Science Center	(Allan Harker)
11:20	CFD Research Corporation	(Andrej Przekwas)
11:25	S.A.I.C.	(John Penhune)
11:30	Mission Research Corporation	(Linda Hightower)
11:35		
11:40	Research International, Inc.	(Jonathon Tobelmann)
11:45	Battelle	(Michael Kuhlman)
11:50	Georgia Institute of Technology	(Peter Hesketh)
11:55	United Technologies Research Center	(Kenneth Dreitlein)
12:00		
12:05	Charles Stark Draper Laboratory	(Jay Coffey)
12:10	Biopraxis	(Anne Grow)
12:15	Sandia National Laboratory	(John Wagner)
12:20	DOE-Kansas City Plant (KCP)	(Daniel Stoltz)
12:25	Arete Associates	(Cindy Orser)
12:30	West Virginia University	(Floyd Russell)
12:35	**Lunch**	
2:05	New Jersey Institute of Technology	(Boris Khusid)
2:10	Thermo Electron Res. and Dvlp.Center	(George Jarvis)
2:15	Xavier University of Louisiana	(Robert Blake)
2:20	S.A.I.C.	(Paul Schaudies)
2:25		
2:30	Sandia National Labs	(Greg Thomas)
2:35	HRL Laboratories, LLC	(Fred Yamagishi)
2:40	Georgia Institute of Technology	(Tom Bevan)
2:45	NASA/ JPL	(Michael Hecht)
2:50	SRI International	(John Carrico)
2:55		
3:00	Triton Systems Inc.	(Hamed Borhanian)
3:05	Titan Corporation	(Ian Sykes)
3:10	Altec Inc.	(Carlo De Luca)
3:15	Sandia National Lab	(Al Lang)
3:20	Naval Research Lab	(Mark Seaver)

Agenda Room #2

11:15	Georgia Institute of Technology	(William Rees Jr.)
11:20	Battelle's Pacific Northwest Division	(Barbara Seiders)
11:25	Idaho Technology	(Todd Ritter)
11:30	Foster-Miller, Inc.	(David Walker)
11:35		
11:40	EOO, Inc.	(Paul Titterton)
11:45	NIST	(Angela Hight Walker)
11:50	CFD Research Corporation	(Vinod Makhijani)
11:55	Environmental Technologies Group	(John Schmidt)
12:00		
12:05	Argonne National Laboratory	(Andrei Mirzabekov)
12:10	Lawrence Livermore National Lab	(Raymond Mariella)
12:15	Wildlife Conservation Society	(Robert Cook)
12:20	ENSCO, Inc.	(Steve Streetman)
12:25	InVitro Diagnostics	(Abraham Grossman)
12:30	University of California, Berkeley	(Arun Majumdar)
12:35	**Lunch**	
2:05	Virginia Tech	(Clarke Tibbetts)
2:10	Los Alamos National Laboratory	(Gary Salzman)
2:15	Science & Engineering Services	(Hyo Sang Lee)
2:20	Owen Research, Inc.	(Robert Owen)
2:25		
2:30	Sarnoff Corporation CN 5300	(Rose Ritts)
2:35	University of Pittsburg	(Igor Lednev)
2:40	Fluent Inc.	(Walter Schwarz)
2:45	Bruker Daltonics, Inc.	(Brian Abraham)
2:50	Schwartz Electro-Optics, Inc.	(Richard Guthrie)
2:55		
3:00	U.S. Army ECBC	(John Bottiger)
3:05	TRW	(Cindy Stellman)
3:10	InfoPike Inc.	(Ramesh Reddi)
3:15	Graseby	(Sam Lucas)

3:25PM – 5:00PM Open Discussion